

Application No. 09/862,905
Response to 11 December 2006 Non-Final Office Action

AMENDMENTS TO THE SPECIFICATION

The title, specification, and abstract were previously amended as indicated below (deleted matter is enclosed by brackets and added matter is indicated by underlining):

In the Title

The title was amended as indicated:

RIDGE CAP TYPE [TYPES] ROOF VENTILATOR

In the Specification

The specification was amended at the paragraph beginning at column 1, line 5:

This invention relates generally to roof ventilators, and particularly to improved methods for manufacturing a foldable corrugated plastic ridge cap type roof ventilator.

The specification was amended at column 1, line 46 of U.S. Patent 5,094,041:

Another alternative is disclosed in U.S. Pat. No. 4,876,950 to Rudeen, which utilizes a single plastic membrane which flexes to conform to different roof pitches, and has a pair of open-celled foam plastic strips secured to the bottom surface thereof to act as the two vent parts placed on opposing sides of the open roof peak. The open celled foam consists of a latticework of interconnected filaments which permit ventilation, but which do not present a plurality of straight or unobstructed paths extending from the exterior to the interior of the roof ventilator.

The specification was amended at column 1, line 65 of U.S. Patent 5,094,041 as indicated:

One drawback of the foldable or flexible roof ventilators discussed above is that if the top surface of the top panel is to be angled parallel with the surface of the roof, the top panel must be scored or creased in order to form a center fold line across which the panel is folded or flexed to bring the top panel and opposing vent parts into parallel alignment and contact with the surface

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of the roof. Even with such a fold or crease, the top panel of the roof ventilator may not always fold along a straight line, but instead will buckle irregularly. Conversely, in some roofing applications (such as with the curved ceramic roofing tiles popular in the western United States) it is necessary to permit the top panel to be gradually convoluted rather than folded along a straight line, in order that the top panel will mold or conform to the non-uniform shape or arrangement of the roofing tiles.

The specification was amended at the paragraph beginning at column 2, line 19, of U.S. Patent 5,094,041 as indicated:

Other screening or partitioning devices for blocking wind driven precipitation from entering the roof opening through the interior of a roof ventilator are known besides that shown in the Sells '953 patent. Representative examples are shown in U.S. Pat. Nos. 2,868,104 to Honholt; 3,311,047 to Smith; 3,481,263 to Belden; 3,625,134 to Smith; and 4,676,147 to Mankowski. The principle behind the operation of most of these devices is simply to place a perforated or slotted panel within the interior of the roof ventilator. The Mankowski '147 patent is interesting in that it places a generally open region between the exterior of the ventilator and the perforated panel, and a solid barrier of reduced height within that open area.

The specification was amended at the paragraph beginning on column 2, line 53, of U.S. Patent 5,094,041 as indicated:

It is yet another object of this invention to design the above roof ventilator such that it incorporates a barrier to prevent wind driven precipitation, as well as moisture drawn by capillary action, from accumulating in and blocking the tubular air passages, or passing through the interior of the roof ventilator and entering through the roof opening.

The specification was amended at the paragraph beginning on column 2, line 61, of U.S. Patent 5,094,041 as indicated:

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Briefly described, the ridge peak type roof ventilator of this invention comprises a pair of vent parts disposed on opposing sides of an opening in a roof peak, and a top panel disposed above and connecting each of the vent parts. The vent parts may be of unitary construction, folded from interconnected panels, or assembled from individual layers of sheet material. Each vent part forms a multiplicity of air passages through which air flows from the interior to the exterior of the roof ventilator. With a top panel constructed from double-faced corrugated plastic having a pair of planar plies and a convoluted intermediate ply, the underside of the top panel may be routed along the centerline to form a generally concave recessed area, thereby cutting away a section of one planar ply and part of the intermediate ply to form oval-shaped openings. Each opening has a pair of side walls traversing generally concave arcuate paths between a maximum height adjacent the side edges of the recessed area and a minimum height along the centerline. When selectively bent, the top panel will responsively fold along the centerline corresponding to the minimum heights of each of the side walls. Each vent part defines a columnar pocket which acts as a precipitation barrier, and which may be formed by cutting an array of vent apertures in separate panels and folding or attaching those panels in parallel abutting contact with the apertures aligned. All or some of the air may therefore be made to pass through the pockets. The roof ventilator may be shipped flat or folded into a compact bundle.

The specification was amended at lines 41 and 42, column 3, of U.S. Patent 5,094,041 as indicated:

FIG. 7 is a [an] broken away perspective view of the roof ventilator of FIG. 1 in an inverted position;

The specification was amended at the paragraph beginning at column 4, line 7, of U.S. Patent 5,094,041 as indicated:

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The preferred embodiment of a foldable corrugated plastic roof ventilator is disclosed in U.S. Pat. No. 4,803,813 to Fiterman, the content of that patent disclosure and related documents being incorporated herein by reference. That embodiment has been generally characterized as a "slit-scored" configuration of the roofing ventilator which is cut, scored, and folded from a sheet of double-faced corrugated plastic sheet material. An alternate embodiment of the "slit-scored" roof ventilator, termed the "nick-scored" configuration, has been utilized herein for reference purposes.

The specification was amended at the paragraph beginning at column 4, line 37, of U.S. Patent 5,094,041 as indicated:

Referring to FIGS. 3 and 4, the ridge cap roof ventilator 10 is fabricated from a generally flat or planar section of double-faced corrugated plastic sheet material 28 such as polyethylene, preferably black in color. Referring to FIG. 10, it may be seen that the double-faced corrugated plastic sheet material 28 includes a pair of generally planar spaced-apart liners or plies 30, 32 which are connected by a corrugated or convoluted intermediate ply 34 having a multiplicity of convolutions forming parallel aligned air spaces 36 or partially enclosed channels defining a longitudinal grain G (FIG. 3) to the double-faced corrugated plastic sheet material 28. In some embodiments, the double-faced corrugated plastic sheet material 28 may take on the configuration of a pair of parallel planar plies 30, 32 with a multiplicity of generally perpendicular connecting beams (not shown), due to the particular molding process involved in making the double-faced corrugated plastic sheet material 28 and the tendency of the corrugated intermediate ply to melt together with the planar plies 30, 32.

The specification was amended at the paragraph beginning at column 5, line 14 of U.S. Patent 5,094,041 as indicated:

Referring again to FIG. 4, it may be seen that the end and intermediate panels 44, 46, 48, 50, 52, 54, 56, 58, 60, and 62 of the blank 38 are divided by lengthwise score lines 68 extending along

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or traversing the length of the blank 38 at a generally perpendicular angle relative to the grain G and the direction of extent of the channels 36. The score lines 68 may be of either the "slit-scored" configuration or "nick-scored" configuration. The "slit-scored" configuration, described more particularly in the Fiterman '813 patent referenced above, is characterized by only one of the planar plies 30, 32 being cut completely therethrough along the entire length of the blank 38. In contrast, the "nick-scored" configuration, shown more particularly in FIGS. 4 and 13, is characterized by both of the planar plies 30, 32 being cut completely therethrough in a plurality of aligned sections similar to enlarged perforations. The sections are separated by short-segments 70 in which neither of the planar plies 32, 30 are cut, but are respectively either stretched across the thickness of two sheets or folded backward upon themselves as the adjoining end and intermediate panels 44, 46, 48, 50, 52, 54, 56, 58, 60, and 62 are folded into parallel abutting contact with one another.

The specification was amended at the paragraph beginning that column 5, line 45 of U.S. Patent 5,094,041 as indicated:

Referring to FIGS. 4-6, it may be seen that each of the end and intermediate panels 44, 46, 48, 50, 52, 54, 56, 58, 60, and 62, as well as the top panel 64 or pair of center panels 65, 66, each define a plurality of oblong vent apertures 72 extending completely therethrough. The vent apertures 72 are spaced-apart and arrayed along straight lines in each of the corresponding panels 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, and 66, and are arrayed so as to be aligned transversely across the width of the blank 38 from each panel to the adjacent or adjoining panels 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, and 66 such that the vent apertures 72 are generally aligned vertically with and overlap at least a portion of one or more of the other vent apertures 72 when the blank 38 is folded to the completely folded roof ventilator configuration shown in FIGS. 1-3.

The specification was amended at the paragraph beginning at column 6, line 15 of U.S. Patent 5,094,041 as indicated:

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The pockets 74 may extend throughout the entire height of each of the vent parts 12, or may alternately extend throughout only a portion of the height of each vent part 12 and be disposed centered, closer to the top panel 66, or closer to the roof 16. In the event it is desired that all air passing from the exterior region surrounding the roof ventilator 10 to the interior region 76 through the multiplicity of air passages 36 pass through a pocket 74, it may be suitable to place two staggered lines of vent apertures 72 along each of the panels 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, and 66 as shown in FIG. 15 such that each air passage 36 within a desired level or throughout the height of the vent parts 12 is interrupted by at least one, and in some cases two, of the columnar pockets 74 when the panels 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, and 66 are completely folded to the roof ventilator configuration.

The specification was amended at the paragraph beginning at column 6, line 32 of U.S. Patent 5,094,041 as indicated:

Referring to FIGS. 5 and 6, it may be seen that in some applications it is preferable for the single top panel 64 or pair of center panels 65, 66 to define one or more top openings or apertures 82 either alone or in addition to the vent apertures 72. The top apertures 82 may be disposed in two lines or sets disposed on opposing sides of a centerline crease 84 or fold line in the case of two center panels 65, 66 as shown in FIG. 5, or may alternately be placed in one line centered along a single top panel 64 as shown in FIG. 6.

The specification was amended at the paragraph beginning at column 6, line 42 of U.S. Patent 5,094,041 as indicated:

Referring particularly to FIGS. 2 and 7-12, it may be seen that the top panel 64 has a concave recessed area 86 routed into the underside or bottom surface 42 of the top panel 64 facing or confronting the interior region 76 of the roof ventilator along the centerline thereof. The concave recessed area 86 cuts or extends entirely through the planar ply 32 and at varying depths partially or entirely through the convoluted intermediate ply 34.

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The specification was amended at the paragraph beginning at column 6, line 51 of U.S. Patent 5,094,041 as indicated:

As may be seen in FIGS. 1-3, this concave recessed area 86 exposes the air passages 36 of the top panel 64 to the interior region 76 so that the top panel 64 may also vent air to the exterior area surrounding the roof ventilator 10. Furthermore, due to the manner in which the convoluted intermediate ply 34 defining the longitudinal grain G and each of the air passages 36 is routed, each one of the convolutions defines a pair of side walls 88, 90 connected together and traversing a generally oval-shaped path and thereby defining a generally oval-shaped opening 92 in each air passage 36 when the blank 38 is inverted and viewed from above as in FIG. 11, and each defining a concave arcuate path when viewed from the side as in FIG. 8. Between the side walls 88, 90 is a generally open area exposed by the oval-shaped opening 92 and which is partially enclosed by the side walls 88, 90 and the planar ply 30. Because the bottom planar ply 32 is completely cut away, the concave recessed area 86 is therefore also generally bounded by two parallel straight side edges 94, 96 of the planar ply 32.

The specification was amended at the paragraph beginning at column 7, line 4 of U.S. Patent 5,094,041 as indicated:

Referring to FIGS. 8 and 9, it may be seen that because the side walls 88, 90 each traverse the generally concave arcuate path, the top edges of each side wall 88, 90 adjacent to the straight side edges 94, 96 bounding the concave recessed area 86 are preferably disposed at the point where the planar ply 32 would meet the convoluted intermediate ply 34 as the double-faced corrugated plastic sheet material 28 is normally constructed, thereby providing the side walls 88, 90 with their maximum height at points most proximate to the straight side edges 94, 96 and disposed on opposing sides of the generally concave recessed area 86. Conversely, due to the generally concave arcuate path, the top edges of each side wall 88, 90 adjacent to the centerline C of the concave recessed area 86 are preferably disposed near to the point where the convoluted

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intermediate ply 34 would meet the planar ply 30, thereby providing the side walls 88, 90 with their minimum height at a point closely proximate to the centerline C of the generally concave recessed area 86. As the height of the side walls 88, 90 decreases, the resistance of the corrugated plastic sheet material 28 to bending against the grain of the convoluted intermediate ply 34 will diminish. Consequently, when the two sides of the top panel 64 are bent or flexed as shown in FIG. 9, the top panel 64 will automatically provide a straight and uniform bend or fold along a line defined by the lowest heights of each of the side walls 88, 90 for each of the air passages 36, which are preferably aligned along the centerline C of the generally concave recessed area 86.

The specification was amended at the paragraph beginning at column 7, line 63 of U.S. Patent 5,094,041 as indicated:

While the preferred embodiment of the above ridge cap roof ventilator 10 has been described in detail above with reference to the attached drawing figures, it is understood that various changes and adaptations may be made in the roof ventilator 10 without departing from the spirit and scope of the appended claims.

In the Abstract

The abstract of U.S. Patent 5,094,041 was amended as indicated:

A ridge peak roof ventilator comprising a pair of vent parts disposed on opposing sides of an opening in a roof peak, and a top panel disposed above and connecting each of the vent parts. The vent parts may be of unitary construction, folded from interconnected panels, or assembled from individual layers of sheet material, and each forms a multiplicity of air passages through which air flows from the interior to the exterior of the roof ventilator. The top panel is constructed from double-faced corrugated plastic having a pair of planar plies and a convoluted intermediate ply. The underside of the top panel is routed along the centerline to form a concave recessed area, thereby cutting away a section of one planar ply and part of the intermediate ply to

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form oval-shaped openings. Each opening has side walls traversing concave arcuate paths between a maximum height adjacent the side edges of the recessed [recessed] area and a minimum height along the centerline. The top panel will responsively fold along the centerline corresponding to the minimum heights of each of the side walls. Each vent part defines pockets serving as precipitation barriers, the pockets being formed by cutting an array of apertures into separate panels and folding or attaching those panels in parallel abutting contact with the apertures aligned. The top panel may also define one or more lines of apertures extending completely therethrough. The roof ventilator may be shipped flat or folded into a compact bundle.